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A Functional Role of Facebook: Psychological and Social Needs

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By

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Edmond, Oklahoma

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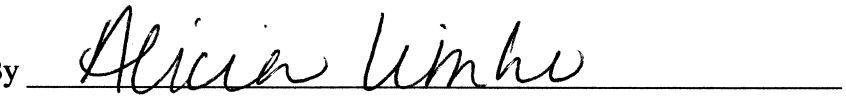
By 

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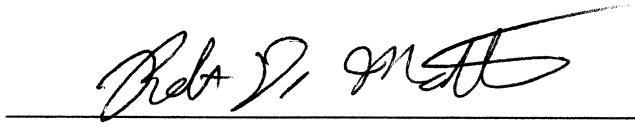

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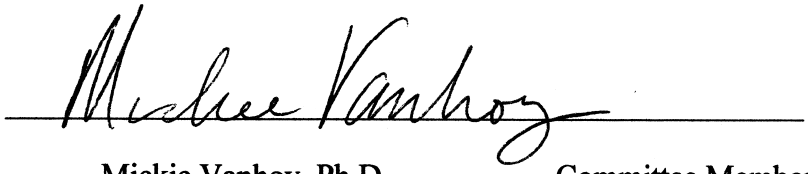

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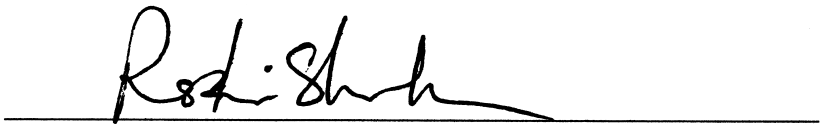

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Abstract

Two studies were conducted to investigate motivations to use Facebook. In Study 1, data from 87 participants were used to determine which psychological (e.g., competence, autonomy, and relatedness) and social (e.g., achievement, affiliation, intimacy, and power) needs predict concrete, observable Facebook behaviors. The data supported the hypothesis that psychological and social needs will predict Facebook behaviors. The need for competence positively predicts hours per week spent on Facebook and the number of personal websites on Facebook. The need for autonomy positively predicts the number of friends and number of photo albums on Facebook. The need for relatedness negatively predicts the number of friends on Facebook. The need for achievement negatively predicts the number of *About Me* words on Facebook. The need for affiliation negatively predicts the number of photo albums on Facebook. In Study 2, data from 14 participants were used to determine the effect of social exclusion on response time to login to Facebook. The data supported the hypothesis that socially excluded individuals will log into Facebook faster than non-socially excluded individuals. For the socially excluded, Facebook can function to reduce social pain. These results suggest that one function of Facebook is to maintain balance in life between psychological needs, social needs, and social interactions.

A Functional Role of Facebook: Psychological and Social Needs

> *Separating knowledge acquisition from motivation has placed the study of motivation in cognitive eclipse and diverted cognitive scientists from studying conceptual structure, motivation, and action as a single integrated system (which they seem likely to be)…Evolved systems for motivational computation use conceptual structure in targeted ways, so motivational computation and knowledge computation cannot be isolated from each other into separate systems (Tooby & Cosmides, 2005, pp. 51-52).*

Facebook.com is the second most used website in the world considering three-month website traffic, behind only google.com (Alexa, 2011). Over 600 million people regularly use Facebook (Facebook, 2011) and Facebook earned about $2 billion in 2010 (Womack, 2010) even though members pay nothing to use the network. Why do so many individuals use Facebook?

With the global popularity of Facebook, it is likely that marketers are motivated to advertise on or invest in this online social network (OSN) because of a secondary reinforcer—money (see Skinner, 1938; Tolman, 1932). Secondary reinforcement as it applies to Facebook is interesting but secondary reinforcement on Facebook is more related to physiological needs (and not psychological and social needs). Facebook members present themselves and interact socially on the network, and it is possible that basic psychological and social needs motivate individuals to use Facebook.

Psychological Needs

Most individuals using Facebook *voluntarily* create and edit profiles, use words and photos to present themselves, and interact socially (Facebook, 2011). That is, Facebook members present themselves and interact with others as they wish, within the

governing rules of the network. Individuals determine what, how, and when they will present information about themselves; and they determine with whom, how, and when they will interact with others. These types of behaviors (e.g., presentation of the self; volitional social interaction) are self-motivated and self-determined (Deci & Ryan, 2002).

Self-determination theory is a motivational perspective on behavior based on three *innate* psychological needs crucial for well-being: competence, autonomy, and relatedness (Deci & Ryan, 2000). From an evolutionary functional perspective, the needs of competence, autonomy, and relatedness have evolved in human animals to provide an adaptive advantage in a social world. Within self-determination theory, need satisfaction is usually measured as a mediator between social environment and an outcome (e.g., psychological well-being). However, psychological needs can motivate behaviors that provide psychological well-being by integrating intrapersonal and interpersonal systems (Baumeister & Leary, 1995; Sheldon & Gunz, 2009). Furthermore, need satisfaction is dynamic; that is, need satisfaction changes over time (Sheldon & Gunz, 2009).

Self-determination theory predicts that psychological well-being is optimal when an individuals integrate intrapersonal and interpersonal processes in an environmental context in which competence, autonomy, and relatedness are immediately present (Deci & Ryan, 2000; Sheldon, 2004). This optimal human-environment interaction allows for growth, satisfaction, and assimilation of the self into social groups. Furthermore, finding or creating environments that allow for competency, autonomy, and relatedness increases psychological well-being.

Self-determined behaviors are *intrinsically motivated* because no external motivation is present (Deci, 1975). Intrinsically motivated behaviors are not contingent on external reinforcement and unfold because they are interesting. Behaviors that

provide competency, autonomy, and relatedness are not necessarily intrinsically motivated; and intrinsically motivated behaviors do not necessarily provide for competency, autonomy, and relatedness. However, intrinsically motivated behaviors that allow for competency, autonomy, and relatedness are usually very persistent in frequency.

Internalization is the transformation of external and social regulations into personal values and self-regulations (Schafer, 1968). Individuals perceive regulation as self-regulated (i.e., self-determined) and autonomous when an external regulation is integrated into the self (Deci & Ryan, 2002). In this way, individuals perceive social regulations as their own regulations, not only integrating themselves intrapersonally but also interpersonally in society (e.g., fractal integration; see Mandelbrot, 1975). It is important to note, however, that neither intrinsic/extrinsic motivations nor internal/external regulations are discrete variables. Both of these concepts are on continuums and are dynamic (i.e., changing over time), complex, and systematic in nature.

Need for Competence

Competence is the perceived effectiveness in environmental interaction (Deci, 1975; White, 1959). Competence is not simply aquired skills or capabilities but rather the sense of confidence and efficacy when interacting with the environment. The need for competence is adaptive because it motivates successful environmental interaction (Deci & Ryan, 2000), such as persevering during an economic recession or integrating into a new social group.

Need for Autonomy

Autonomy is the choice and perceived inner source in behavior (deCharms, 1968;

Deci & Ryan, 1985). Autonomy involves the free expressing of the self and doing what is interesting and valued. Autonomous behavior can be influenced by external sources but only when the behavior is interesting and valuable without the external influence (Deci & Ryan, 2002). The need for autonomy motivates individuals to self-organize and self-regulate (Deci & Ryan, 2000), which is beneficial when approaching appetitive stimuli (e.g., making coalitions) and avoiding aversive stimuli (e.g., not conforming to maladaptive peer pressure), evidencing its adaptive value.

Need for Relatedness

Relatedness is the perceived connection with other individuals and the impression of belongingness in the social environment (Baumeister & Leary, 1995; Bowlby, 1979). The need for relatedness motivates individuals to be accepted by others, to care for and be cared for by others, and to be integrated into society (Ryan, 1995). The need for relatedness is adaptive and is evident in attachment (see Ainsworth & Bowlby, 1991; Limke, Showers, & Zeigler-Hill, 2010) and organization in social groups (Deci & Ryan, 2000).

Social Needs

Social need theory is a motivational perspective on behavior based on four *acquired* social needs that function as personality traits: achievement, affiliation, intimacy, and power (McClelland, 1985). *Acquired* social needs operate differently than *innate* psychological needs. Whereas psychological needs may motivate behavior by integrating competency, autonomy, and relatedness motivations intrapersonally and interpersonally; social needs do not motivate behavior unless an environmental incentive activates a need of achievement, affiliation, intimacy, or power (Reeve, 2009). Social needs are more environmentally-reactive than psychological needs, and psychological

needs are more stable over time than social needs. Individuals learn social needs as they develop and grow in social environments.

Need for Achievement

The *need for achievement* motivates behavior when individuals want to perform well in comparison to a standard of excellence (McClelland, Atkinson, Clark, & Lowell, 1953). A standard of excellence can involve competition with tasks, the self, or other individuals (Reeve, 2009). Achievement motivation can influence individuals to approach or avoid competition and is dynamic, i.e., changing over time (Atkinson & Birch, 1970).

Achievement goals are also important to the understanding of achievement motivation (Weiner, 1986). *Learning goals* function to develop competence and improve the self whereas *performance goals* function to demonstrate competence and enable individuals to outperform others (Ames, 1992; Dweck, 1986). Thus, the need for achievement is an interaction between approach/avoidance tendencies and type of goal (Elliot & Thrash, 2002).

Need for Affiliation

The *need for affiliation* motivates individuals to create, preserve, or restore positive relationships with other individuals (Atkinson, Heyns, & Veroff, 1954) and is strongly related to the fear of interpersonal rejection (Heckhausen, 1980). Individuals high in the need for affiliation often seek approval, acceptance, and security in relationships (Reeve, 2009). The main environmental condition that activates the need for affiliation is deprivation from social interaction; therefore, those high in the need for affiliation strive to maintain interpersonal networks (McClelland, 1985).

Need for Intimacy

Unlike the need for affiliation, the *need for intimacy* is activated by the positive aspects of affiliation motivation (McAdams, 1980). The need for intimacy motivates individuals to have warm, close, open, and communicative relationships with other individuals, and the motivation is not activated by fear of rejection. Whereas the need for affiliation is mostly a negative affect (i.e., feels aversive) based need, the need for intimacy is mostly a positive affect (i.e., feels appetitive) based need (Maslow, 1987).

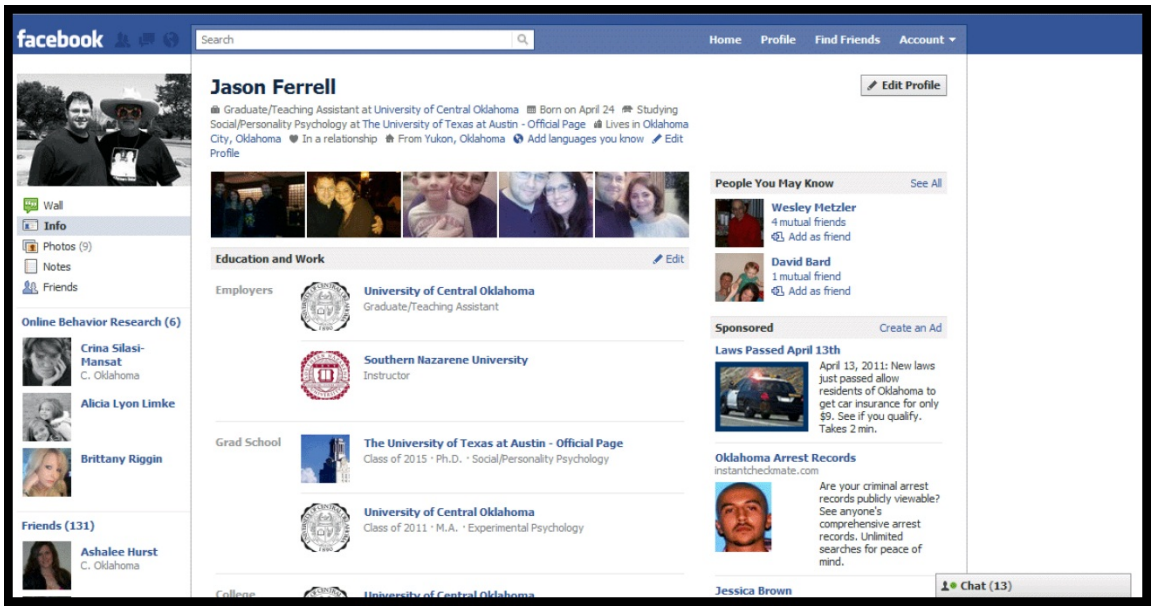
Need for Power

The *need for power* motivates individuals to have "impact, control, or influence over another person, group, or the world at large" (Winter, 1973, p. 250). Having impact allows the establishment of power; having control allows the maintenance of power; and having influence allows for expansion or restoration of power. Individuals high in the need for power often seek leadership positions; act aggressively; seek influential occupations such as teachers, psychologists, clergy, or business executives; and display prestigious possessions (McClelland, 1975; Winter & Stewart, 1978).

Facebook

Facebook is an online social network (OSN) in which members can create personalized profiles, control what profile information is presented publicly, interact with other members that are linked from selected networks (e.g., universities, churches, workplaces, or friends' groups), and post information about themselves on their profiles (Buffardi & Campbell, 2008; Lewis, Kaufman, & Christakis, 2008; Wilson, Gosling, & Graham, 2011). Facebook is also the largest photo-sharing website in the world, with users uploading over 2.5 billion photos each month (Putnam, 2010). See Figure 1 for an example of a Facebook profile.

Figure 1. An example of a small portion of a Facebook profile.



The study of behavior in the context of Facebook is important for three reasons: (a) the massive popularity of Facebook is changing the way millions of individuals interact, (b) the use of Facebook affords observable data that were previously difficult for scientists to gather (e.g., friend networks, self-presentation, and communication), and (c) the potential benefits (e.g., facilitation of social interaction) and potential costs (e.g., privacy violations) of Facebook use should be considered (Wilson et al., 2011). The fast growth of Facebook research has yielded an extensive and varied literature field, and the number of Facebook users and the number of published articles about Facebook have grown at about same rate (see Wilson et al., 2011, for a complete review of peer-reviewed Facebook literature).

Motivation to Use Facebook

One commonly revealed motivation to use Facebook is gaining information about other individuals (Bonds-Raacke & Raacke, 2010; Ellison, Steinfeld, & Lampe, 2007; Joinson, 2008; Lampe, Ellison, & Steinfield, 2006; Park, Kee, & Valenzuela, 2009).

Dunbar (1998) postulated that language evolved to allow humans to gossip, and that gossip allows individuals to know more information about more individuals than is possible by direct observation. Dunbar stated that monkeys and apes groom each other to build trust and knowledge and to reinforce social bonds (i.e., social grooming) and it seems that human animals perform social grooming by gossiping. Thus, individuals may be motivated to interact on Facebook for the purpose of social grooming, consequently facilitating the increase of knowledge available about a large social group and the increase of social bonding (Gosling, 2009; Tufekci, 2008). Supporting the social grooming hypothesis, Facebook users report that a common motivation to use Facebook is to connect with Facebook friends (Bonds-Raacke & Raacke, 2010; Ellison et al., 2007; Joinson, 2008; Park et al., 2009; Sheldon, 2008).

Research indicates that individuals use Facebook to gather information about others (i.e., bridging social capital) and to connect interpersonally (i.e., bonding social capital). But a larger question remains: What is motivating individuals to seek information about others and connect with others on Facebook? That is, what are the underlying psychological and social needs that predict Facebook use?

Given the potential bias (e.g., response; systematic) involved with self-reports of affect, cognition, or behavior (cf. Aiken & Groth-Marnat, 2006; Hunt, 1937; Krosnick, 1999; Paulhus & John, 1998; Swartz, Hippler, Deutsch, & Strack, 1985) and given that there is no consensus about the use of bias indicators (McGrath, Mitchell, Hough, & Kim, 2010), one large concern regarding Facebook studies is that most of them use self-reports for measurement. However, Burke, Marlow, and Lento (2010) used behavioral measures of Facebook use as well as self-reports of loneliness to determine that: (a) increased direct communications on Facebook are related to increased bonding social capital and

decreased loneliness, and (b) increased consummation of information about others on Facebook is related to decreased bonding and bridging social capital and increased loneliness. It is possible that loneliness motivates Facebook use, but the relationship between loneliness and Facebook use requires further study.

In another behavioral study, physiological measures (i.e., skin conductance and facial electromyography [EMG]) and a behavioral measure (i.e., time spent looking at a Facebook page) were recorded from 36 undergraduates that participated in a study investigating the emotional responses to Facebook use (Wise, Alhabash, & Park, 2010). Participants navigated (i.e., looked at; read) Facebook profiles and the navigating behaviors were coded for social browsing (e.g., passive social information-seeking; looking at features such as newsfeeds) or social searching (e.g., extractive social information-seeking; looking at features such as friends' profiles). Participants spent more time social searching than social browsing (a result that Lampe et al., 2006, also found with self-report). Furthermore, facial EMG differences revealed that participants experienced more pleasantness when social searching than when social browsing. It seems that extractive social information-seeking (i.e., looking at profiles) on Facebook is more appetitive than passive social information-seeking (i.e., looking at newsfeeds).

Relatedness need-satisfaction on Facebook is a dynamic process (Sheldon, Abad, & Hinsch, 2011). Sheldon and colleagues explained relatedness-need satisfaction as two processes. One process unfolds when relatedness need-dissatisfaction motivates individuals to use Facebook (i.e., need as a motive). The other process takes place when relatedness need-satisfaction stems from greater use of Facebook (i.e., need—or lack of—as an outcome). Sheldon and colleagues explained this finding with the possibility that lonely (i.e., relatedness need-dissatisfaction) individuals may be rewarded with

positive affect during Facebook use, but that Facebook use may not be solving the underlying life problems that result in loneliness. Thus, Facebook use may be a coping mechanism for those individuals. The dynamic motivational process involving Facebook use warrants further study, however.

Current Study

Most Facebook behavior is self-motivated and self-determined, and the intrinsic motivation involved in Facebook use may partially explain the persistence of Facebook behavior. Facebook is an easily accessible social environment that may function to facilitate psychological need satisfaction for some individuals. Furthermore, individuals acquire social needs as they develop and grow in social environments, and it is possible that Facebook is a social environment that activates social needs.

The purpose of the current study is to investigate psychological and social needs associated with Facebook use. Although it complicates measurement and interpretation, combining two perspectives on motivation (i.e., innate psychological needs and acquired social needs) provides a more realistic explanation of motivation than only considering one perspective or motivational variable. That is, this combination of innate and acquired motivations provides a more systematic approach to understanding motivation (see Tooby & Cosmides, 2005). Additionally, this combination of psychological and social needs integrates self-determination theory (i.e., psychological need theory) and social need theory, which may provide a more realistic conception of adaptive and maladaptive behavior than using one theory (see Sheldon et al., 2011; Sheldon & Gunz, 2009).

STUDY 1: PREDICTING FACEBOOK BEHAVIORS

Two studies were conducted to investigate motivations to use Facebook. The purpose of Study 1 was to determine which psychological and social needs predict

concrete, observable Facebook behaviors. The hypothesis was that psychological and social needs will predict Facebook behaviors. Because of the individual differences associated with needs as motives (e.g., approach tendencies likely result in increased behaviors and avoidant tendencies likely result in decreased behaviors), no specific predictions were hypothesized.

Method

Participants

Eighty-seven undergraduates (51 females, 36 males; M_{age} = 20.90 years, *SD* = 4.82) from the University of Central Oklahoma participated for partial fulfillment of course research requirements. Inclusion criteria required that participants be at least 18 years old, be native English speakers, and be Facebook members.

Materials and Procedure

Need for competence. The *environmental mastery* subscale of the Scales of Psychological Well-Being (SPWB; Ryff, 1989) measured need for competence. The *environmental mastery* factor is a 14-item Likert scale with six anchors (strongly disagree to strongly agree). Internal consistency in the current study was good, α = .86. A high scorer "has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to persona needs and values" and a low scorer "has difficulty managing everyday affairs; feels unable to change or improve surrounding context; is unaware of surrounding opportunities; lacks sense of control over external world" (p. 1072). For the current study a *high scorer* displays competence and is an individual *low* in the need for competence.

Need for autonomy. The *autonomy* subscale of the SPWB (Ryff, 1989)

measured need for autonomy. The *autonomy* factor is a 14-item Likert scale with six anchors (strongly disagree to strongly agree). Internal consistency in the current study was acceptable, α = .78. A high scorer "is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates behavior from within; evaluates self by personal standards" and a low scorer "is concerned about the expectations and evaluations of others; relies on judgments of others to make important decisions; conforms to social pressures to think and act in certain ways" (p. 1072). For the current study a *high scorer* displays autonomy and is an individual *low* in the need for autonomy.

Need for relatedness. The *positive relations with others* subscale of the SPWB (Ryff, 1989) measured need for relatedness. The *positive relations with others* factor is a 14-item Likert scale with six anchors (strongly disagree to strongly agree). Internal consistency in the current study was good, α = .82. A high scorer "has warm, satisfying, trusting relationships with others; is concerned about the welfare of others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships" and a low scorer "has few close, trusting relationships with others; finds it difficult to be warm, open, and concerned about others; is isolated and frustrated in interpersonal relationships; not willing to make compromises to sustain important ties with others" (p. 1072). For the current study a *high scorer* displays relatedness and is an individual *low* in the need for relatedness.

Need for achievement. The *need for achievement* scale (Schmidt & Frieze, 1997) measured need for achievement. The *need for achievement* scale is a 23-item Likert scale with five anchors (strongly disagree to strongly agree). Internal consistency in the current study was good, α = .85. Need for achievement is defined "as a drive to

outperform someone else, to meet or surpass some standard of excellence, or to do something unique" (p. 432). For the current study a high scorer is an individual high in the need for achievement.

Need for affiliation. The *need for affiliation* scale (Schmidt & Frieze, 1997) measured need for affiliation. The *need for affiliation* scale is a 25-item Likert scale with five anchors (strongly disagree to strongly agree). Internal consistency in the current study was good, $\alpha = .80$. Need for affiliation is defined "as acting in order to establish, restore or maintain a close, warm, friendly relationship with another or others, being emotionally concerned over separation from someone else, or being concerned with participating in friendly activities with others" (p. 431). For the current study a high scorer is an individual high in the need for affiliation.

Need for intimacy. The *need for intimacy* scale (Frieze, n.d.) measured need for intimacy. The *need for intimacy* scale is a 15-item Likert scale with five anchors (strongly disagree to strongly agree). Internal consistency in the current study was good, $\alpha = .82$. High scorers are described as warm, sincere, appreciative, and loving; and low scorers are described as dominant, outspoken, self-centered, and imaginative (McClelland, 1985). For the current study a high scorer is an individual high in the need for intimacy.

Need for power. The *need for power* scale (Schmidt & Frieze, 1997) measured need for power. The *need for power* scale is a 20-item Likert scale with five anchors (strongly disagree to strongly agree). Internal consistency in the current study was good, $\alpha = .88$. Need for power is defined "as a desire for impact, control, or influence over another person, group, or the world at large" (p. 431). For the current study a high scorer is an individual high in the need for power.

Facebook behaviors. Facebook measures were exact counts of 25 different Facebook behaviors. There was 100% reliability between four different counters. One self-report measure of Facebook use was the number of hours per week spent on Facebook. See Table 1 for a list and descriptive statistics of Facebook measures.

Procedure. Participants entered a university laboratory and consented to participate in a study titled *Online Interactions* for course research credit, during which time they interacted with one of four different researchers. Participants were seated in an isolated cubicle that contained a large desk and a computer. Participants completed online versions of SPWB and the social need scales (for measurement of competence, autonomy, relatedness, achievement, affiliation, intimacy, and power needs), followed by a demographic questionnaire with questions about first language, age, sex, ethnicity, classification, sexual orientation, and hours per week spent on Facebook.

Following completion of the online measures, the researcher used a laptop computer to show each participant a Facebook profile named *UCO Researcher*. The researcher asked each participant to befriend *UCO Researcher* and explained that researchers would only count Facebook behaviors and that researchers would not save or keep anything from the profile, and that the Facebook behaviors would be recorded anonymously. The researcher asked each participant if he or she was comfortable befriending *UCO Researcher* (no participants expressed any concerns), and then asked the participant to login to Facebook and send *UCO Researcher* a friend request. The researcher instructed the participant that he or she could unfriend *UCO Researcher* after one week. Participants were thanked for participating and debriefed about the general purpose of the study. Researchers then accepted participants' Facebook friend requests and within 12 hours recorded Facebook behaviors.

Table 1. Descriptive statistics for Facebook behaviors.

Variable	Mean	*SD*
Hours per week spent on Facebook	12.25	13.63
Friends	472.64	310.22
Total photos	245.80	301.75
Photo albums	8.30	7.67
Profile photos	30.40	25.21
Personal videos	1.05	1.96
Status updates and comments by self on own page—not including comments on pictures, videos, or links posted by self—during the 30 days prior to the study session	46.29	50.90
Comments or replies by self on all friends' pages—not including comments on pictures, videos, or links posted by self—during the 30 days prior to the study session	14.75	17.61
Education entries	1.85	0.78
Employment entries	0.48	0.70
Interests	1.30	2.33
Activities	4.08	7.16
Other Facebook pages of interest	54.95	96.53
Contact phone numbers	0.32	0.47
Contact emails	1.15	0.60
Contact addresses	0.21	0.41
Contact IM screen-names	0.24	0.46
Personal websites	0.09	0.29
Notes	1.26	3.43
Music artists liked	11.24	13.83
Movies liked	7.91	10.29
TV shows liked	6.31	6.80
Books liked	1.91	2.93
Languages spoken (non-English)	0.23	0.82
Favorite quotations	1.92	2.61
Words in the *About You* section	32.31	35.64

Note. $N = 87$

Results

Data Analysis

Researchers conducted a 95% Winsorization (i.e., any value greater than two standard deviations from the mean was replaced with the value equal to two standard deviations from the mean) on Facebook behavior outliers, and then all seven need scales were entered into one simultaneous multivariate multiple regression analysis to predict Facebook behaviors. The simultaneous multivariate multiple regression analysis accounted for shared variance between the need scales, accounted for shared variance between the Facebook behaviors, and controlled for Type I error by virtue of calculations within one analysis. Table 2 displays correlations between the seven needs scales.

Table 2. Correlations between the seven need scales.

Variable	1	2	3	4	5	6
1. Competence						
2. Autonomy	.23*					
3. Relatedness	.48*	.12				
4. Achievement	.31*	.21*	.04			
5. Affiliation	.06	-.06	.47*	.08		
6. Intimacy	.04	.14	.33*	.22*	.47*	
7. Power	.13	.15	.29*	.48*	.33*	.20

Note. $N = 87$
*$p < .05$.

Predicting Facebook Behaviors

For hours per week (HPW) spent on Facebook, the model was significant ($R^2 = .21$; $p = .009$). That is, psychological and social needs accounted for 21% of overall variance in HPW spent on Facebook. Specifically, need for competence predicted HPW

spent on Facebook, β = -.41, $t(79) = -3.15$, $p = .002$, such that the higher the *environmental mastery* (the lower the need for competence), the fewer the HPW spent on Facebook.

The model was also significant for number of friends ($R^2 = .19$; $p = .009$). That is, psychological and social needs accounted for 19% of overall variance in number of friends. Specifically, need for autonomy predicted number of friends, β = -.22, $t(79) = -2.02$, $p = .047$, such that the higher the *autonomy* (the lower the need for autonomy), the fewer the number of friends. Additionally, need for relatedness predicted number of friends, β = .44, $t(79) = 3.05$, $p = .003$, such that the higher the *positive relations with others* (the lower the need for relatedness), the greater the number of friends.

The model was significant for number of photo albums ($R^2 = .16$; $p = .046$). That is, psychological and social needs accounted for 16% of overall variance in number of photo albums. Specifically, need for autonomy predicted number of photo albums, β = -.26, $t(79) = -2.33$, $p = .022$, such that the higher the *autonomy* (the lower the need for autonomy), the fewer the number of photo albums. Additionally, need for affiliation predicted number of photo albums, β = -.29, $t(79) = -2.18$, $p = .032$, such that the higher the need for affiliation, the fewer the number of photo albums.

The model was also significant for number of personal websites ($R^2 = .19$; $p = .018$). That is, psychological and social needs accounted for 19% of overall variance in number of personal websites. Specifically, need for competence predicted number of personal websites, β = -.36, $t(79) = -2.71$, $p = .008$, such that the higher the *environmental mastery* (the lower the need of competence), the fewer the number of personal websites.

The model also significant for number of *About Me* words ($R^2 = .16$; $p = .044$). That is, psychological and social needs accounted for 16% of overall variance in number

of *About Me* words. Specifically, need for achievement predicted number of *About Me* words, $\beta = -.31$, $t(79) = -2.38$, $p = .020$, such that the higher the need for achievement the fewer the number of *About Me* words. No other significant relationships were found.

To summarize, the need for competence predicts hours per week spent on Facebook and the number of personal websites on Facebook. The need for autonomy predicts the number of friends and number of photo albums on Facebook. The need for relatedness predicts the number of friends on Facebook. The need for achievement predicts the number of *About Me* words on Facebook. The need for affiliation predicts the number of photo albums on Facebook.

STUDY 2: THE EFFECT OF SOCIAL EXCLUSION ON FACEBOOK USE

The purpose of Study 2 was to determine the effect of social exclusion on response time to login to Facebook. Social exclusion should motivate behavior from increased psychological and social needs associated with increased negative affect following social exclusion (Koslov, Mendes, Pajtas, & Pizzagalli, 2011; Manor, DeWall, Baumeister, & Schaller, 2007; Williams & Nida, 2011). The hypothesis was that socially excluded individuals will login to Facebook faster than non-socially excluded individuals will.

Method

Participants

Fourteen undergraduates (8 females, 6 males; $M_{age} = 20.38$ years, $SD = 3.50$) from the University of Central Oklahoma completed the study for partial fulfillment of course research requirements. Data from two additional participants were not included because they did not login to Facebook following their chat sessions (i.e., including one from each condition; i.e., they did not use the computer at all during the monitoring session).

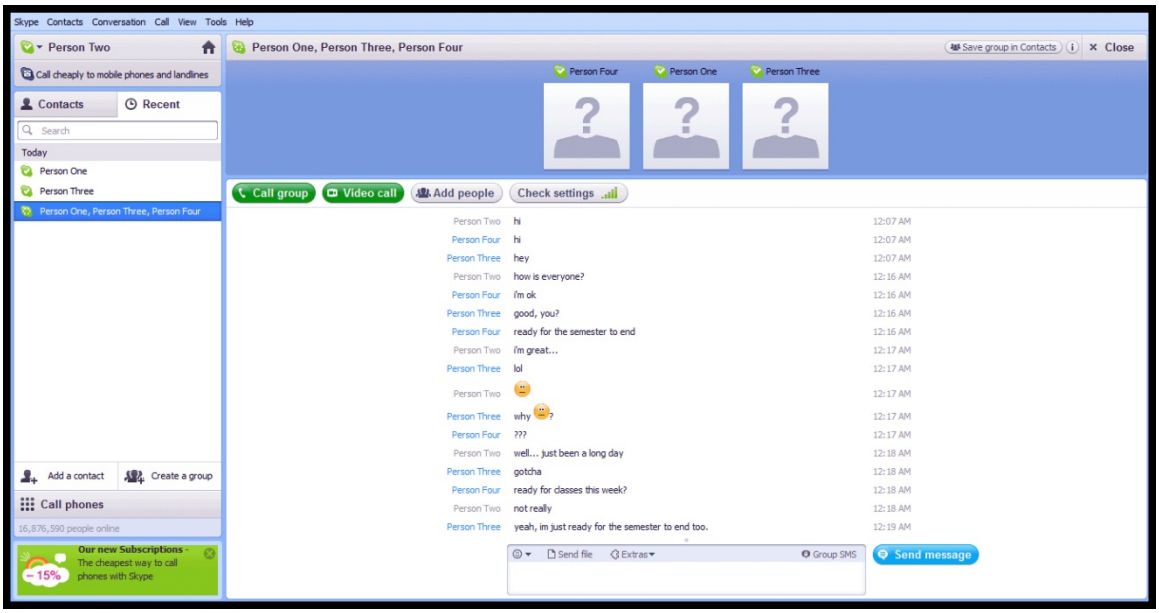
Inclusion criteria required that participants be at least18 years old, be native English speakers, be Facebook members, and have experience with online chat-rooms.

Materials and Procedure

Need scales. The same computerized need scales (competence, autonomy, relatedness, achievement, affiliation, intimacy, and power) from Study 1 were used in Study 2. However, due to the small sample size, they were not included in the analyses.

Chat-room. Skype 5.1 computer software (Skype, n.d.) facilitated online group chat. Skype allowed users to easily interact with text-only chat in an online group chat-room (see Figure 2).

Figure 2. An example of a Skype chat room.



Computer monitoring. CamStudio 2.0 software (CamStudio, n.d.) monitored computer activity. CamStudio saved participants' computer screen activities as .avi video files. The only measurements taken from these videos were response times to

interact socially online by (a) logging into Facebook, (b) logging into a blog, (c) logging into a forum, (d) interacting in a chat-room, (e) interacting in online game chat, (f) logging into an online dating website, (g) logging into any online social network other than Facebook, (h) sending an email, and (i) engaging in any other computer activity in which the participant would be interacting socially.

Procedure. Participants entered a university laboratory and consented to participate in a study titled *Social Interactions*, during which time they interacted with one of six different researchers. Participants were seated in an isolated cubicle that contained a large desk and a computer, and were asked to turn off their cell phones for the duration of the study. Participants completed online versions of SPWB and the social need scales (for measurement of competence, autonomy, relatedness, achievement, affiliation, intimacy, and power needs) followed by a demographic questionnaire with questions about first language, age, sex, ethnicity, classification, and sexual orientation. The question used in Study 1 (i.e., hours per week spent on Facebook) was not included to prevent priming of Facebook.

The researcher then asked each participant to step away from the computer while another researcher prepared the computer for the next task. The researcher instructed the participant that he or she would be chatting anonymously in an online chat-room with three peers. In reality, the participant chatted with three confederates. A different researcher started the group chat on Skype and started CamStudio to record computer screen activity while the researcher was instructing the participant.

Participants were randomly assigned to one of two chat conditions (i.e., control or exclusion). Control participants (n = 7) chatted without restriction for 15 minutes. Excluded participants (n = 7) chatted without restriction for 7.5 minutes and were then

socially excluded for the remaining 7.5 minutes (i.e., confederates did not reply to the participant, did not ask the participant anything, and would purposely change the chat topic if the participant started one). Following chat sessions, all participants were instructed by a researcher that "Researchers need to set up the next phase of the study, which will take a while. Please stay in this cubicle until we are ready for the next phase. You are free to use the computer if you want to." The researcher then left the participant alone for 30 minutes, during which the participant's computer screen activity was recorded with CamStudio.

Immediately following the 30 minute alone time, the researcher stopped the participant and fully debriefed him or her about the purpose of the study and the purpose of the deception. A researcher ensured that participants were not under any distress from the study, answered any questions, and then thanked participants for participating. After the participant exited the laboratory, a researcher recorded response times, in seconds, to interact socially online from the CamStudio video, then immediately deleted the video.

Researchers conducted a manipulation check on social exclusion during a pilot study. Four participants (2 socially excluded; 2 non-socially excluded) experienced the study up to the completion of their chat sessions, and immediately following the chat sessions, the researcher asked participants "Did you notice anything unusual during your chat session?" Each socially excluded participant reported feeling excluded during his or her chat session. Each non-socially excluded participant responded that he or she did not notice anything unusual. Data from the pilot study were not included in any analyses.

Results

Chat condition produced a significant effect on time (s) to login to Facebook, $t'(6.65) = 2.81$, $p = .028$, $\eta^2 = .40$, power = .73 (*equal variances not assumed*).

Socially excluded participants (M = 42.43, SD = 37.52) logged into Facebook significantly faster than non-socially excluded participants (M = 218.29, SD = 161.43).

Discussion

The data supports the hypothesis that psychological and social needs predict Facebook behaviors. Regarding psychological needs, individuals higher in the need for competence spend more time on Facebook and have more personal websites on Facebook than individuals lower in the need for competence. Individuals higher in the need for autonomy have more friends and photo albums on Facebook than individuals lower in the need for autonomy; however, individuals higher in the need for relatedness have fewer Facebook friends than individuals lower in the need for relatedness. Regarding social needs, individuals higher in the need for achievement have fewer words in the *About Me* section on Facebook than individuals lower in the need for achievement. Individuals higher in the need for affiliation have fewer photo albums on Facebook than individuals lower in the need for affiliation. Additionally, the hypothesis for Study 2 is supported, such that individuals who experience social exclusion during online chat log into Facebook faster than individuals who do not experience social exclusion during online chat.

Psychological and Social Needs

It seems that Facebook is functioning to satisfy the need for competence, given that individuals high in this need report spending more time on Facebook and that these individuals have more personal websites on Facebook than low need individuals. Facebook may be a social environment in which individuals can display their competence by interacting on Facebook or by displaying personal websites. Also, it seems that Facebook is functioning to satisfy the need for autonomy as high need individuals have

more friends and photo albums than low need individuals; this makes theoretical sense because high need individuals rely on judgments of others and having more friends and photo albums (which display different aspects of life) allows for more feedback from more people.

It seems paradoxical that individuals high in the need for relatedness have fewer Facebook friends than low need individuals. However, operationally, a high need individual has "few close, trusting relationships with others; finds it difficult to be warm, open, and concerned about others; is isolated and frustrated in interpersonal relationships; not willing to make compromises to sustain important ties with others" (Ryff, 1989, p. 1072). Finding that high need individuals have fewer Facebook friends than low need individuals is theoretically supportive. Furthermore, it is possible that a directionality issue is present, such that having few friends on Facebook is an indicator or predictor of high need for relatedness because an increase in friends would decrease the need, which provides evidence for Sheldon and colleagues' (2011) explanation of a two-process view of relatedness-need satisfaction. It seems that Facebook is functioning to satisfy the need for relatedness; however, it is important to note that need strength is not only a motivator of behavior, but also an outcome of environmental experience.

Facebook is a social environment that may activate the need for achievement, such that high need individuals present fewer *About Me* words than low need individuals. Need for achievement can motivate avoidant behavior (Atkinson & Birch, 1970), and it is likely the high need individuals present few *About Me* words in effort to avoid competition with Facebook friends. That is, most individuals present personal information in the *About Me* section of Facebook, which may be setting a standard of excellence in life. High need for achievement individuals may avoid competing with that

standard due to doubt in ability to outperform others.

Finally, Facebook is a social environment that may activate the need for affiliation, such that high need individuals have more photo albums on Facebook than low need individuals. The need for affiliation can motivate avoidant behavior due to fear of interpersonal rejection (Heckhausen, 1980). Presenting more photo albums on Facebook reveals more aspects of one's personal life, and high need individuals may present fewer photo albums than low need individuals in effort to avoid interpersonal rejection of some aspects of their lives. Further evidencing this explanation is the finding that high need for intimacy is a near-significant predictor of the number of photo albums ($\beta = .23$, $p = .06$), such that individuals higher in the need for intimacy have more photo albums than low need individuals. The need for intimacy is not based on fear of rejection (i.e., it is an approach motivator) and motivates individuals to have close and communicative relationships (McAdams, 1980), and presenting more photo albums (i.e., more aspects of life) could function to provide intimacy on Facebook. The need for power did not significantly predict any Facebook behaviors.

Social Exclusion

The current study is the only known study to use behavioral, *verbal* social exclusion in a social environment. Social exclusion should motivate behavior from increased psychological and social needs that are in response to negative affect (i.e., social pain) following social exclusion (Koslov et al., 2011; Manor et al., 2007; Williams & Nida, 2011). The current study finds that socially excluded individuals log into Facebook faster than non-socially excluded individuals. Behavioral responses following exclusion likely stem from need threat, and when reinclusion is possible (e.g., being social after experiencing social exclusion), belonging and self-esteem needs motivate

reinclusion (Williams & Nida, 2011). Reinclusion for the socially excluded individuals in the current study was possible by interacting with other individuals online. Therefore, it is likely that need for belongingness (i.e., need for relatedness) and need to maintain self-esteem influenced the excluded individuals to log into Facebook.

However, random assignment to conditions should result in equal mean needs between groups, as measured before the environmental manipulation. Thus, any group differences in needs should only have resulted from the social exclusion (i.e., reactive to the environment). Additionally, the relationship between need for affiliation and social exclusion, after the exclusion, deserves study because the need for affiliation is reactive to deprivation from social interaction (McClelland, 1985). Although the sample was too small to analyze any need differences or any influences from needs, *something* motivated the excluded individuals to log into Facebook faster than non-excluded individuals. That *something* was likely social pain (i.e., negative affect) which manifested as *need to get social*, and it seems the easiest *way to get social* was to log into Facebook. For the socially excluded, Facebook can function to reduce social pain. Facebook can serve a homeostatic function, facilitating the move from negative affect back to equilibrium.

Limitations

Although the current study contributes significantly to the literature, a limitation for both studies were small sample sizes. Study 1 included 87 participants. With seven predictor variables, 280 participants would provide a better model for prediction; that is, with 280 participants the analysis would have sufficient power to detect other significant relationships such as the model predicting other Facebook behaviors (Tabachnick & Fidell, 2007). Study 2 included 14 participants, which prevented the analysis of needs and stifled subsequent conclusions about needs in relation to social exclusion. However,

the small sample sizes provide evidence of the distinction of the relationships that were found.

Also, the correlational design of Study 1 does not allow for any causal conclusions. That is, it is possible that (a) needs influence Facebook behaviors, (b) Facebook behaviors influence needs, and (c) other unmeasured variables, needs, and Facebook behaviors are all influencing each other. Therefore, the conclusions are limited by design of the study. One of the unmeasured variables is time. The relationship between needs and behaviors is dynamic (i.e., changing over time), and we did not capture any need/behavior relationships over time. However, the design was systematic and integrating because it integrated psychological and social needs into one model for prediction.

The self-reported need scales are limitations. Self-reports of needs are likely unreliable and invalid because individuals are biased observers of themselves (i.e., participants may bias responses on purpose; they may not know how *needy* they are). Furthermore, social needs are reactive to the environment and when participants in this study were measured for needs, they were in an environment that likely did not active social needs. Thus, the lack of predictions from social needs could be a result of a measurement environment in which those needs were not activated. However, these limitations did not prevent the finding of significant relationships between needs and Facebook behaviors.

Measurement and Future Studies

Future studies should include ecologically valid behavioral measures of motivation (other than unreliable Thematic Apperception Test measures) and of Facebook use. As evidenced in the current study, behavioral measures of Facebook use

are easily obtainable, although time-consuming to quantify. Regarding other measurements, one reasonable method, as proposed by Knight (1994) and demonstrated by Mather and Knight (2007), is a combination of signal detection and Q-methodology. For example, individuals could be timed while sorting items (e.g., words or phrases) that represent motivational needs by condition of instruction (e.g., environmental situations).

Another reasonable method is the analysis of natural language use (as demonstrated by Pennebaker & King, 1999). For example, the content of language used on Facebook in status updates, comments, and in the *About Me* section could provide verbal behavior measures of motivation. Additionally, the relationship between social grooming (Dunbar, 1998) and language content deserves study. Although the current study included measures of Facebook behaviors, researchers should continue to find *identity claims* and *behavioral residue* (Gosling, Ko, Mannarelli, & Morris, 2002) on Facebook as a means to identify important Facebook behaviors that could explain why individuals use Facebook (e.g., how individuals display competence; how individuals provide feedback to others). A combination of verbal (e.g., *About Me* content) and nonverbal (e.g., photo content) behavior could be extremely powerful in understanding motivation to use Facebook. Finally, the relationship between attachment in close relationships and Facebook use deserves study.

Conclusion

Individuals are motivated by innate psychological and acquired social needs to use Facebook because Facebook is an easily accessible social environment to present themselves, obtain information about others, connect with others, and ease social pain. Facebook behaviors are self-determined, context dependent, and are interactions of intrapersonal processes and interpersonal relationships. Before Facebook, it was difficult

to observe many of the concrete behaviors that are now fossilized in the Facebook clouds. The study of Facebook is important because millions are using Facebook. More importantly, the study of Facebook is important because it provides a fossil record that displays personality and social interaction dynamics for scientists to discover. Most importantly, understanding of Facebook is important because one function of Facebook is to maintain balance in life between psychological needs, social needs, and social interactions.

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